JUNE 8, 2011
PROPOSED REVISIONS TO COMPLIANCE CALCULATIONS
HANDOUT #2
(for discussion purposes only)

(Note: the single underline and strikeout represent the 45-day comment period revisions. The double underline and strikeout represent additional proposed revised language.)

~~§ 17946.5~~ Section 17945.5. ~~Documentation Requirements.~~ Compliance Calculation a~~A~~nd Formulas

~~The Board may require product manufacturers and container manufacturers to submit to the Board supporting documentation that substantiates their compliance claims following the receipt of a certification. Except as otherwise stated, documentation to substantiate a compliance claim must be provided for the preceding calendar year.~~
~~Proprietary information included in a supporting documentation submitted to the Board as required by this Article shall not be made available to the general public. The Board's procedures for protection of proprietary information can be found in subsection 17948(i).~~
~~(a) I am a product manufacturer. What information must I provide to substantiate the certification claims made in response to Section 17946?~~

~~The information necessary to substantiate compliance varies depending upon the compliance option selected.~~

~~(1) For rigid plastic packaging containers for which the postconsumer material compliance option is claimed, the product manufacturer must provide, at a minimum, the following information:~~

~~(A) Certification from the container manufacturer stating the total weight of postconsumer resin in the containers for which compliance is claimed and the total weight of all resin used in the containers for which compliance is claimed. If later requested by the Board, the container manufacturer must provide copies of shipment orders, bills of lading, purchase orders, or other evidence of receipt of postconsumer resin during the previous calendar year for the manufacture of the containers for which compliance is claimed,~~

~~(B) The formula and data used to calculate the percentage of postconsumer material in the container. The following formulas may be used, if mathematically appropriate for the subject containers, or the product manufacturer may supply its own appropriate formula:~~

(a) The ~~Department~~ Board product manufacturer shall use the following formulas ~~in this Section~~ to calculate its ~~analyze a product manufacturer's~~ claim of compliance. The calculation shall be carried out to two decimal places. Unless otherwise noted, all weight should be in grams and all calculations should be by container line. ~~Product manufacturers may use other mathematically appropriate formulas other than those listed below to calculate their degree of compliance. Any product manufacturer that uses an alternate formula should be prepared to explain why its formula is equivalent to the following formulas.~~

(~~a~~b) Postconsumer Material Content Compliance

For rigid plastic packaging containers for which ~~product manufacturer~~ compliance is ~~sought~~ claimed through the use of postconsumer material content (PCM) pursuant to Section 17944(a)(1), use the following formulas.

(1) For a single ~~or multiple product~~rigid plastic packaging container line~~s~~:

~~Percent of Postconsumer Material = [total weight of postconsumer resin used in all containers / (total weight of postconsumer resin material used in all containers) + (total weight of all other resins used in all rigid plastic packaging containers)] x 100~~

$$\text{Postconsumer Material Content} = \frac{\sum_{n}\left[\left(\text{Rigid Plastic Packaging Container's Postconsumer Material Content}\right) * \left(\text{Number of Rigid Plastic Packaging Containers}\right)\right]_{n}}{\sum_{n}\left[\left(\text{Rigid Plastic Packaging Container's Weight}\right) * \left(\text{Number of Rigid Plastic Packaging Containers}\right)\right]_{n}} * 100$$

$$\text{Percent PCM} = \left[\frac{W_{PCM}}{W_{RPPC}}\right] \times 100$$

where: W_{PCM} = the weight of postconsumer material in each rigid plastic packaging container

W_{RPPC} = the total weight of each rigid plastic packaging container

(2) For averaging multiple rigid plastic packaging container lines:

$$\text{Percent PCM} = \left[\frac{\sum (W_{PCM})_n}{\sum (W_{RPPC})_n} \right] \times 100$$

where: W_{PCM} = the weight of postconsumer material in each rigid plastic packaging container
W_{RPPC} = the total weight of each rigid plastic packaging container
n = the number of container lines being averaged

(3) To comply under this option the ~~percent of~~ postconsumer material content must be equal to or greater than 25.00 percent.

(~~b~~c) Alternative Container Compliance ~~Under Section 17944.1~~Method

For compliance ~~sought~~ claimed through use of California postconsumer material pursuant to Section 17944.1, use the following formula:

~~Alternative Compliance Calculation = $\frac{(\Sigma \text{ PCM}_{RPPC} + \Sigma \text{ PCM}_{OP\&P})}{\text{Total Gram Weight of all RPPCs}} \times 100 \geq 25.00\%$~~

$$\text{Percent PCM} = \left[\frac{\sum (W_{PCM} \times N_{RPPC})_n + \sum (W_{OPP} \times N_{OPP})_n}{(W_{RPPC})} \right] \times 100$$

where: W_{PCM} = the weight of postconsumer material in each rigid plastic packaging container
N_{RPPC} = the number of rigid plastic packaging containers
W_{OPP} = the weight of postconsumer material in each other (i.e., non-RPPC plastic packaging container
N_{OPP}= the number of other (non-RPPC) plastic packaging containers
n = the number of container (or other plastic packaging) lines
W_{RPPC} = the total weight of the rigid plastic packaging containers in the rigid plastic packaging container lines

~~$\Sigma \text{ PCM}_{RPPC}$ = Σ((weight of postconsumer material in the rigid plastic packaging container) * (number of rigid plastic packaging containers))~~

~~$\Sigma \text{ PCM}_{OP\&P}$ = Σ((weight of California postconsumer material in non-rigid plastic packaging container associated products or packaging) * (number of products or packages)); or~~

~~$\Sigma \text{ PCM}_{OP\&P}$ = Total weight of California postconsumer material purchased during the measurement period as documented in contracts, purchase orders, or invoices.~~

~~Total Gram Weight of all RPPCs = Σ((rigid plastic packaging container gram weight) x (number of rigid plastic packaging containers))~~

To comply under this option the postconsumer material must be equal to or greater than 25.00 percent.

~~(C) Any other information from the product manufacturer necessary to substantiate the product manufacturer's claim of compliance with this option.~~

(~~c~~d) Source Reduction Compliance

(~~2~~)(~~1~~) For rigid plastic packaging containers for which compliance is claimed through ~~the~~ source reduction ~~accomplished by a simple reduction in container weight~~ pursuant to Section 17944 (a)(4), use the following formulas:~~compliance option is claimed, the product manufacturer must provide, at a minimum, the following information:~~

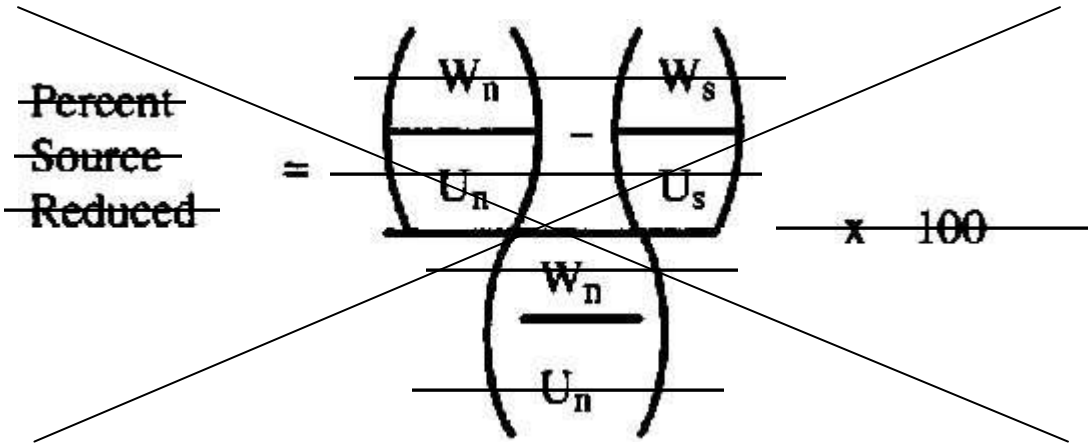
~~(A) The percentage the container has been source reduced,~~

~~(B) The container weight per unit or use of product of the non-source reduced container and the container weight per unit or use of product for the container for which source reduction is claimed,~~

~~(C) The formula and data used to calculate the percentage that the containers were source reduced. The following formulas may be used, if mathematically appropriate for the subject containers, or the container manufacturer may supply its own appropriate formula:~~

~~(A)~~ (1) For~~mula to calculate the percentage of~~ a single ~~product or~~ rigid plastic packaging container ~~packaging~~ line where the container weight has been reduced:

$$\text{Percent Source Reduced} = \left(\frac{W_{n} - W_{s}}{W_{n}}\right) \times 100$$



~~Un = units or uses of product per non-source reduced container~~

Ws = ~~average~~ the~~total~~ weight ~~or volume capacity~~ of the source reduced rigid plastic packaging container~~s~~.

~~U = units or uses of product per source reduced container~~

~~i = each container line complying with this source reduction option~~

~~N = total annual number of containers in container line *i* complying with the source reduction option~~

~~(B) Formula to calculate the average percentage of source reduction multiple product or rigid plastic packaging lines:~~

~~Percent Source Reduced~~ = ~~$\sum_{i} N_i \left(\frac{W_{n_i}}{U_{n_i}} - \frac{W_{s_i}}{U_{s_i}} \right) \Big/ \sum_{i} N_i \left(\frac{W_{n_i}}{U_{n_i}} \right) \times 100$~~

~~$$\text{Source Reduction} = \frac{\sum_{n} \left[\left(\begin{array}{c}\text{Rigid Plastic Packaging Container's NON - Source Reduced Weight}\end{array} \right) * \left(\begin{array}{c}\text{Number of Rigid Plastic Packaging Containers}\end{array} \right) - \left(\begin{array}{c}\text{Rigid Plastic Packaging Container's Source Reduced Weight}\end{array} \right) * \left(\begin{array}{c}\text{Number of Rigid Plastic Packaging Containers}\end{array} \right) \right]_{n}}{\sum_{n} \left[\left(\begin{array}{c}\text{Rigid Plastic Packaging Container's NON - Source Reduced Weight}\end{array} \right) * \left(\begin{array}{c}\text{Number of Rigid Plastic Packaging Containers}\end{array} \right) \right]_{n}} * 100$$~~

~~To comply under this option the Percent Source Reduced must be equal to or greater than 10.00.~~

(2) For a single rigid plastic packaging container line where the product has been concentrated:

$$\text{Percent Source Reduced} = \left(\frac{USE_N - USE_S}{USE_N} \right) \times 100$$

where: USE_N = units of use of the non-source reduced product
USE_s = units of use of the source reduced (concentrated) product

(~~2~~3) For a single rigid plastic packaging container~~s~~ line ~~where source reduction compliance under Section 17944(a)(4) is sought through either concentrating the product or by~~ with a combination of concentrating the product and reducing the weight of the rigid plastic packaging container that holds the product:

~~(A) Formula to calculate the percentage of source reduction for a concentrated single product or rigid plastic packaging container line:~~

$$\text{Percent Source Reduced} = \left(\frac{(W_{N} / USE_{N}) - (W_s / USE_s)}{(W_{N} / USE_{N})} \right) \times 100$$

where:

W_{N} = ~~total~~ the weight of the non-source reduced rigid plastic packaging container~~s~~
USEn = units of use of the non-source reduced rigid plastic packaging container~~s~~
Ws = ~~total~~ the weight of the source reduced rigid plastic packaging container~~s~~
USEs = ~~number~~ units of use of the source reduced rigid plastic packaging container~~s~~

~~(B)~~ 4) For~~mula to calculate the percentage of~~ averaging source reduction ~~for~~ over multiple ~~concentrated products or~~ rigid plastic packaging container lines with either container weight reduction and/or product concentration:

~~$$\text{Percent Source Reduced} = \left(\frac{N_i(\Sigma(Wn_i / USEn_i) - \Sigma(Ws_i / USEs_i))}{\Sigma N_i (Wn_i / USEn_i)} \right) \times 100$$~~

$$\text{Percent Source Reduced} = \left(\frac{\sum [(W_N / USE_N) - (W_S / USE_S)]_n}{\sum (W_N / USE_N)_n} \right) \times 100$$

where:

W_{N} = ~~total~~ the weight of the non-source reduced rigid plastic packaging container~~s~~
USE_{N} = units of use of the non-source reduced rigid plastic packaging container~~s~~
Ws = ~~total~~ the weight of the source reduced rigid plastic packaging container~~s~~
USEs = ~~number~~ units of use of the source reduced rigid plastic packaging container~~s~~
~~i~~n = the number of ~~each rigid plastic packaging~~ container lines being averaged ~~complying with this source reduction option~~

(5) To comply under this option the Percent Source Reduced must be equal to or greater than 10.00 percent.

~~(D) Any other information from the product manufacturer necessary to substantiate the product manufacturer's claim of compliance with this option.~~

~~(3) For rigid plastic packaging containers for which the reuse compliance option is claimed, the product manufacturer must provide, at a minimum, the following information:~~

~~(A) A statement of the measurement period that was used to quantify the amount that the identified containers were reused, and a quantitative description of how that measurement period was determined;~~

~~(B) Copies of sales reports or other evidence that show the following:~~

~~1. The total volume or weight of the product sold in the original containers in the established measurement period, and~~

~~2. The total volume or weight of the replacement product sold.~~

~~Sales reports of the product sold in the original rigid plastic packaging container and sales reports of the replacement product must be identified separately; and~~

~~3. If the replacement product is of a different strength than the original product, the product manufacturer must provide the appropriate conversion factor. The conversion factor shall explain the number of uses per weight unit or volume unit of product for both the original product and for the replacement product.~~

~~(C) The formula and data used to calculate the number of reuses achieved for the containers. The following formulas may be used, if mathematically appropriate for the subject containers, or the product manufacturer may supply its own appropriate formula:~~

(~~d~~e) Reusable Container Compliance
For rigid plastic packaging containers ~~where~~ for which ~~product manufacturer~~ compliance is ~~sought~~ claimed through reuse of the containers pursuant to Section 17944(a)(3), use the following formulas for the given measurement period:

(1) For~~mula to calculate the number of reuses for a given measurement period for~~ a single ~~product or~~ rigid plastic packaging container line:

~~Average Reuse Per Container Liner = (number of replacement product packages sold) x n / (number of original containers sold)~~

Reuse Per Rigid Plastic = (# replacement packages sold x n~~=Ri~~)

Packaging Container (Oi)

$$\text{Average Reuse Per Rigid Plastic Packaging Container} = \left[\frac{R \times V_R}{P \times V_P}\right]$$

where:

Ri = ((the number of replacement product packages sold) x n) during the period

Oi P = (the number of original rigid plastic packaging containers sold) during the period

V_R = the volume of the replacement product package

V_P = the volume of the original rigid plastic packaging container

n = tThe number of times the replacement product packages will fill the original rigid plastic packaging container to accomplish the same number of units or uses of product held by the original rigid plastic packaging container.

(2) Formula to calculate the average number of reuses for a given measurement period for averaging multiple container lines:

$$\text{Average Reuse Per Rigid Plastic Packaging Container} = \frac{\Sigma\,(R_i \times V_R)_n}{\Sigma\,(P_{Oi} \times V_P)_n}$$

where:

Σ Ri = Σ ((the number of replacement product packages sold) x n) during the period

Σ Oi P = Σ (the number of original rigid plastic packaging containers sold during the period)

V_R = the volume of the replacement product package

V_P = the volume of the original rigid plastic packaging container

n = The the number of times the replacement product packages will fill the original rigid plastic packaging container to accomplish the same number of units or uses of product held by the original rigid plastic packaging containercontainer lines being averaged.

i = each container line seeking this compliance option

R = total number of units or uses sold in replacement products packages calculated by multiplying the number of units or uses in each replacement package by the number of replacement packages sold during the measurement period.

Oi = total number of units or uses sold in original containers calculated by multiplying the number of units or uses in each original container by the number of original containers sold during the

~~measurement period.~~

(3) If the replacement product is a different strength than the original product, the product manufacturer must provide the appropriate conversion factor. The conversion factor shall explain the number of uses per weight unit or volume unit of product for both the original product and for the replacement product.

(4) To comply under this option, the Average Reuse Per Container must be equal to or greater than 5.00 reuses.

~~(D) Any other information from the product manufacturer necessary to substantiate the product manufacturer's compliance claim with this option.~~

~~NOTE: This option will demonstrate compliance for the original containers only; the replacement product container must comply under another option.~~

~~(4) For rigid plastic packaging containers for which the refill compliance option is claimed, the product manufacturer must provide, at a minimum the following information:~~

~~(A) A statement of the measurement period that was used to quantify the amount that the identified containers were refilled, and a quantitative description of how that measurement period was determined;~~

~~(B) Copies of sales reports or other evidence which shows the following:~~

~~1. The total number of containers sold during the measurement period.~~

~~2. The total number of original containers used by the product manufacturer during the established measurement period.~~

~~(C) The formula and data used to calculate the number of refills achieved for the containers. The following formulas may be used, if mathematically appropriate for the subject containers, or the product manufacturer may supply its own appropriate formula:~~

(~~e~~f) Refillable Container Compliance

For rigid plastic packaging containers ~~where product manufacturer~~for which compliance is ~~sought~~ claimed through the refilling of the container by the product manufacturer pursuant to Section 17944(a)(3), use the following formulas for the given measurement period:

(1) For~~mula to calculate the number of refills for a given measurement period for~~ a single ~~product or~~ rigid plastic packaging container line:

$$\text{Average Refills Per Container} = \frac{\text{(number of rigid plastic packaging containers sold during the measurement period)}}{\text{}}$$

~~(number of newly purchased original rigid plastic packaging containers used by the product manufacturer during the measurement period)~~

$$\text{Average Refills Per Container} = \frac{F}{P}$$

where:
F = the number of refills of rigid plastic packaging containers made by the product manufacturer during the measurement period
P = the number of original rigid plastic packaging containers sold during the measurement period

(2) For~~mula to calculate the number of refills for a given measurement period for~~ averaging multiple ~~product or~~ rigid plastic packaging container lines:

$$\text{Average Refills Per Container} = \frac{\text{(total weight of all rigid plastic packaging containers sold during the measurement period)}}{\text{(total weight of all newly purchased original rigid plastic packaging containers used during the measurement period)}}$$

$$\text{Average Refills Per Container} = \frac{\sum (F)_n}{\sum (P)_n}$$

where:
F = the number of refills of rigid plastic packaging containers made by the product manufacturer during the measurement period
P = the number of original rigid plastic packaging containers sold during the measurement period
n = the number of container lines being averaged

(3) To comply with this option, the Average Refills Per Container must be equal to or greater than 5.00 refills.